

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	"20040180999".pn.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 09:53
S2	9	("3047608" "3205250" "3281381" "4206103" "4290976" "6362260").PN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 09:16
S3	71	STEVENSON-DONALD\$.in. or NGUYEN-DUONG\$.in. or HARR-MARKS\$.in. or JAKUPCA-MICHAEL\$.in.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 09:18
S4	11	DOVER CHEMICAL CORPORATION.as.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 12:41
S5	530	524/115.cccls.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:03
S6	11	("3047608"   "3205250"   "3281381"   "4206103"   "4290976"   "4739000").PN. OR ("6362260").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 12:22
S7	3	S6 not S2	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 12:23
S8	52	("2564646"   "3281381"   "3558537"   "3755200"   "3928267"   "3931364"   "3943081"   "3998782"   "4116926"   "4125501"   "4134868"   "4159261"   "4159973"   "4174297"   "4206103"   "4244848"   "4282141"   "4310429"   "4333868"   "4340514"   "4346025"   "4402858"   "4601839"   "4614756"   "4661544"   "4751118"   "4782170"   "5120783"   "5283273"   "5364895"   "5374377"   "5414030"   "5519076"   "5519077"   "5532401"   "5534566"   "5714095"   "5814691"   "5880189"   "5889095"   "5969015"   "6013703"   "6022946"   "6046263"   "6103796"   "6136900"   "6180700"   "6362260"   ".H000506").PN. OR ("6824711").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 12:38
S9	48	S8 not S6 not S2	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 12:39
S10	7	S4 and phosphite	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 12:41
S11	6	S10 not S2	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 13:50
S12	12	S3 and phosphite	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 13:50
S13	7	S12 not S11 not S10 not S2	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:03
S14	207	S5 and phosphite	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:03
S15	1	S5 and (phosphite near4 \$4cumyl)	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:04

## EAST Search History

S16	31	S5 and (phosphite near4 \$3isodecyl)	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:04
S17	0	(558/70.ccls. or 558/70.ccls.) and (phosphite with \$5cumyl)	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:05
S18	51	(558/70.ccls. or 558/70.ccls.) and (phosphite)	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:16
S19	45	S18 and (aryl or phenyl or aromatic)	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:05
S20	9	(558/70.ccls. or 558/70.ccls.) and phosphite.ti.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:17
S21	5	(558/70.ccls. or 558/70.ccls.) and phosphite.ab.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:17
S22	10	S21 or S20	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:20
S23	236	((5cumyl near2 phenyl) or \$5cumylphenyl) with phosphite	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:23
S24	86	S23 and (PVC or polyvinyl chloride)	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:54
S25	6	((5cumyl near2 phenyl) or \$5cumylphenyl) with phosphite	EPO; JPO; DERWENT	ADJ	ON	2006/06/26 14:51
S26	128	S23 and (propoxy or ethoxy)	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:47
S27	0	(\$5cumylphenoxyethyl or \$5cumylphenoxypropyl or (\$5cumylphenoxy ethyl) or (\$5cumylphenoxy propyl)) with phosphite	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:50
S28	0	(\$5cumylphenoxyethyl or \$5cumylphenoxypropyl or (\$5cumylphenoxy near2 ethyl) or (\$5cumylphenoxy near2 propyl)) with phosphite	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:52
S29	0	((5cumyl near2 phenoxy) or \$5cumylphenoxy) with phosphite	EPO; JPO; DERWENT	ADJ	ON	2006/06/26 14:51
S30	1	ethoxy near3 \$5cumylphenyl	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:52
S31	8	S24 and (phosphite.ab. or phosphite.ti.)	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 14:54
S32	1	"20040183054".pn.	US-PGPUB; USPAT; USOCR	ADJ	ON	2006/06/26 15:21



# STIC Search Report

EIC 1700

STIC Database Tracking Number: 193927

**TO:** Sandra Poulos  
**Location:** REM10D18  
**Art Unit :** 1714  
**June 27, 2006**

**Case Serial Number:** 10/709578

**From:** Kathleen Fuller  
**Location:** EIC 1700  
**REMSEN 4B28**  
**Phone:** 571/272-2505  
**Kathleen.Fuller@uspto.gov**

## Search Notes

I DID A BROAD SEARCH COVERING CLAIMS 1 AND 7 FINDING 132 STRUCTURES. I THEN SEARCHED FOR THE STRUCTURES OF CLAIM 4 , USING A RATHER BROAD VERSION OF THE 2 COMPOUNDS IN CLAIM 4. THERE WERE 20 ANSWERS BUT 18 OF THEM WERE POLYMERS AND NOT CORRECT. ONLY 2 ANSWERS WERE GOOD (THE COMPOUNDS OF CLAIM 4) AND THERE WAS ONLY ONE CA REFERENCE WHICH WAS TO THE APPLICANT.

I COMBINED THE 132 STRUCTURES WITH UTILITY AND THERE WERE 3 REFERENCES, ONE TO THE APPLICANT AND THE 2 OTHERS NOT USEFUL.

IF YOU HAVE ANY QUESTIONS PLEASE CALL ME.



# STIC Search Results Feedback Form

EIC 17000

Questions about the scope or the results of the search? Contact the EIC searcher or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

> I am an examiner in Workgroup:  Example: 1713

> Relevant prior art found, search results used as follows

- 102 rejection
- 103 rejection
- Cited as being of interest.
- Helped examiner better understand the invention.
- Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- Foreign Patent(s)
- Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

> Relevant prior art not found:

- Results verified the lack of relevant prior art (helped determine patentability).
- Results were not useful in determining patentability or understanding the invention

Comments:

193927

Fuller, Kathleen

From: SANDRA POULOS [sandra.poulos@uspto.gov]  
Sent: Monday, June 26, 2006 10:12 AM  
To: STIC-EIC1700  
Subject: Database Search Request, Serial Number: 10/709,578

Requester:  
SANDRA POULOS (P/1714)

Art Unit:  
GROUP ART UNIT 1714

Employee Number:  
81697

Office Location:  
REM 10D18

Phone Number:  
(571)272-6428

Mailbox Number:

Case serial number:  
10/709,578

Class / Subclass(es):  
524/115

Earliest Priority Filing Date:  
5/14/04

Format preferred for results:  
Paper

Search Topic Information:  
Please search the chemical structures in Claims 1 and 7.

Special Instructions and Other Comments:

Please copy claims  
from Edam. KF

POULOS 10/709578 06/27/2006 Page 1

=> FILE REG  
FILE 'REGISTRY' ENTERED AT 10:49:22 ON 27 JUN 2006  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 26 JUN 2006 HIGHEST RN 889573-50-6  
DICTIONARY FILE UPDATES: 26 JUN 2006 HIGHEST RN 889573-50-6

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 6, 2006

Please note that search-term pricing does apply when conducting SmartSELECT searches.

\*\*\*\*\*  
\*  
\* The CA roles and document type information have been removed from \*  
\* the IDE default display format and the ED field has been added, \*  
\* effective March 20, 2005. A new display format, IDERL, is now \*  
\* available and contains the CA role and document type information. \*  
\*  
\*\*\*\*\*

Structure search iteration limits have been increased. See HELP SLIMITS for details.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

=> FILE HCPLU  
FILE 'HCPLUS' ENTERED AT 10:49:25 ON 27 JUN 2006  
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FILE COVERS 1907 - 27 Jun 2006 VOL 145 ISS 1  
FILE LAST UPDATED: 26 Jun 2006 (20060626/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE L18

L5 STR

10  
C  
{  
Ak @12 Cb~^C~^Cb~^G1~^G2~^O~^P~^O~^G3  
1 } 3 4 5 6 7 8 9  
C  
11

REP G1=(0-1) O

REP G2=(0-4) C

VAR G3=12/ID

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 1

GGCAT IS UNS AT 3

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M8 C AT 12

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L7 132 SEA FILE=REGISTRY SSS FUL L5

L11 STR

10  
CH3  
{  
Ak @12 Cb~^C~^Cb~^O~^Ak~^O~^P~^O~^G3  
1 } 3 4 5 6 7 8 9  
CH3  
11

VAR G3=12/ID

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 1

GGCAT IS UNS AT 3

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M8 C AT 12

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L14 20 SEA FILE=REGISTRY SUB=L7 SSS FUL L11

L15 18 SEA FILE=REGISTRY ABB=ON L14 AND PMS/CI

L16 2 SEA FILE=REGISTRY ABB=ON L14 NOT L15

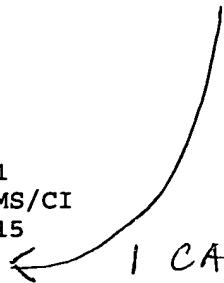
L18 1 SEA FILE=HCAPLUS ABB=ON L16

132 structures from  
this query  
Covers claim 1 or claim 7

Subset search  
for claim 4 compounds

20 structures - 18 are polymers  
and not good answers

Only 2 structures



1 CA reference

=> D L18 IBIB ABS IND HITSTR

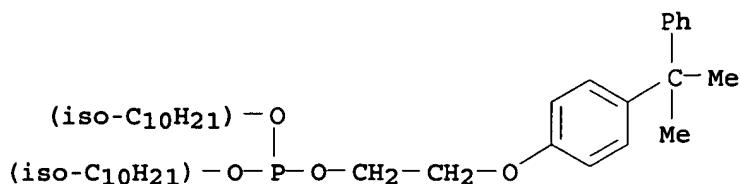
L18 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:759855 HCAPLUS  
 DOCUMENT NUMBER: 141:261515  
 TITLE: Reducing phenol emissions in polymers using phosphites  
 INVENTOR(S): Stevenson, Donald R.; Nguyen, Duong N.; Harr, Mark E.;  
 Jakupca, Michael R.  
 PATENT ASSIGNEE(S): Dover Chemical Corporation, USA  
 SOURCE: U.S. Pat. Appl. Publ., 20 pp. *applicant*  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004180999	A1	20040916	US 2004-709578	20040514
WO 2005113665	A2	20051201	WO 2005-US15331	20050503
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPLN. INFO.: US 2004-709578 A 20040514

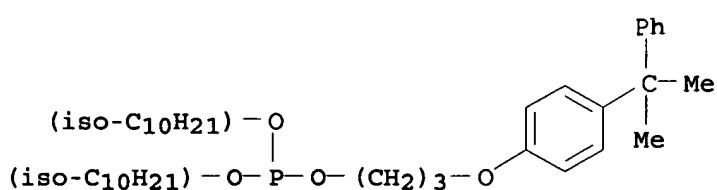
OTHER SOURCE(S): MARPAT 141:261515

AB A process for reducing phenol emissions from a polymer resin comprises adding at least one specified phosphite additive (e.g., ethoxy-p-cumylphenyl diisodecyl phosphite) to the resin (e.g., PVC). These phosphites utilize p-cumyl phenol-based derivs. in order to provide a phenol free derivative of the above mentioned conventional phosphites.  
 IC ICM C08K005-49  
 INCL 524115000  
 CC 37-6 (Plastics Manufacture and Processing)  
 ST phenol emission redn polymer phosphite additive  
 IT 457898-48-5 756522-31-3 756522-33-5 756522-35-7  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (reducing phenol emissions in polymers using phosphites)  
 IT 9002-86-2, Polyvinyl chloride  
 RL: POF (Polymer in formulation); USES (Uses)  
 (reducing phenol emissions in polymers using phosphites)  
 IT 756522-31-3 756522-33-5  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (reducing phenol emissions in polymers using phosphites)  
 RN 756522-31-3 HCAPLUS  
 CN Phosphorous acid, diisodecyl 2-[4-(1-methyl-1-phenylethyl)phenoxy]ethyl ester (9CI) (CA INDEX NAME)



RN 756522-33-5 HCAPLUS

CN Phosphorous acid, diisododecyl 3-[4-(1-methyl-1-phenylethyl)phenoxy]propyl ester (9CI) (CA INDEX NAME)



*no other  
references to these  
compounds*

=&gt; =&gt; D QUE

L5

STR

10

C

{

Ak @12      Cb ~ C ~ Cb ~ G1 ~ G2 ~ O ~ P ~ O ~ G3

1	2	3	4	5	6	7	8	9
C								
11								

Broad structure  
search  
Combined with  
ability

REP G1=(0-1) O

REP G2=(0-4) C

VAR G3=12/ID

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 1

GGCAT IS UNS AT 3

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M8 C AT 12

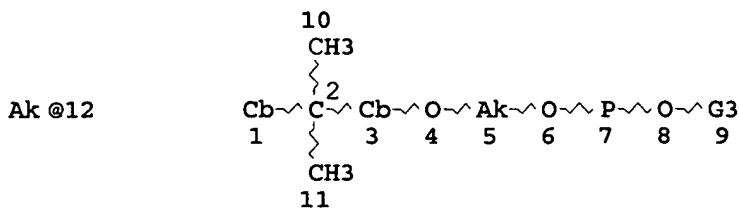
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L7            132 SEA FILE=REGISTRY SSS FUL L5  
L11            STR



VAR G3=12 /ID

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
 GGCAT IS UNS AT 1  
 GGCAT IS UNS AT 3  
 DEFAULT ECLEVEL IS LIMITED  
 ECOUNT IS M8 C AT 12

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L14	20 SEA FILE=REGISTRY SUB=L7 SSS FUL L11	
L15	18 SEA FILE=REGISTRY ABB=ON	L14 AND PMS/CI
L19	16 SEA FILE=HCAPLUS ABB=ON	L15
L24	9192 SEA FILE=HCAPLUS ABB=ON	<u>PHENOL? (3A) (EMISS? OR REDUC? OR FREE)</u>
L25	0 SEA FILE=HCAPLUS ABB=ON	L19 AND L24
L28	323 SEA FILE=HCAPLUS ABB=ON	L7
L29	3 SEA FILE=HCAPLUS ABB=ON	L28 AND L24
L34	3 SEA FILE=HCAPLUS ABB=ON	L25 OR L29

*3 CA references*

=&gt; D L34 IBIB ABS IND HITSTR 1-3

L34 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:759855 HCAPLUS  
 DOCUMENT NUMBER: 141:261515  
 TITLE: Reducing phenol emissions  
       in polymers using phosphites  
 INVENTOR(S): Stevenson, Donald R.; Nguyen, Duong N.; Harr, Mark E.;  
               Jakupca, Michael R.  
 PATENT ASSIGNEE(S): Dover Chemical Corporation, USA  
 SOURCE: U.S. Pat. Appl. Publ., 20 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

*applicant*

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004180999	A1	20040916	US 2004-709578	20040514
WO 2005113665	A2	20051201	WO 2005-US15331	20050503
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL,				

SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,  
ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,  
RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,  
MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2004-709578 A 20040514

OTHER SOURCE(S): MARPAT 141:261515

AB A process for reducing phenol emissions from  
a polymer resin comprises adding at least one specified phosphite additive  
(e.g., ethoxy-p-cumylphenyl diisodecyl phosphite) to the resin (e.g.,  
PVC). These phosphites utilize p-cumyl phenol-based derivs. in order to  
provide a phenol free derivative of the above mentioned  
conventional phosphites.

IC ICM C08K005-49

INCL 524115000

CC 37-6 (Plastics Manufacture and Processing)

ST phenol emission redn polymer phosphite  
additive

IT 457898-48-5 756522-31-3 756522-33-5

756522-35-7

RL: MOA (Modifier or additive use); USES (Uses)  
(reducing phenol emissions in polymers  
using phosphites)

IT 9002-86-2, Polyvinyl chloride

RL: POF (Polymer in formulation); USES (Uses)  
(reducing phenol emissions in polymers  
using phosphites)

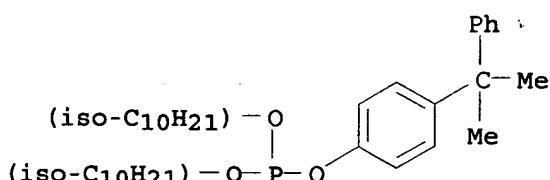
IT 457898-48-5 756522-31-3 756522-33-5

756522-35-7

RL: MOA (Modifier or additive use); USES (Uses)  
(reducing phenol emissions in polymers  
using phosphites)

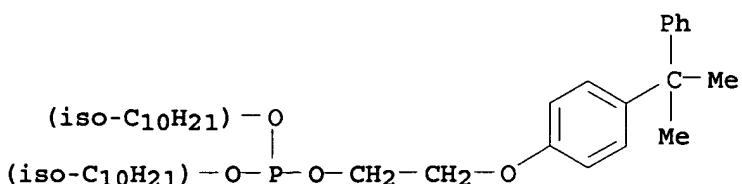
RN 457898-48-5 HCPLUS

CN Phosphorous acid, diisodecyl 4-(1-methyl-1-phenylethyl)phenyl ester (9CI)  
(CA INDEX NAME)

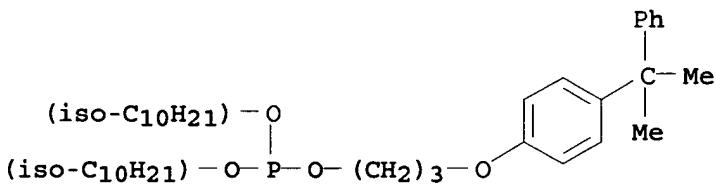


RN 756522-31-3 HCPLUS

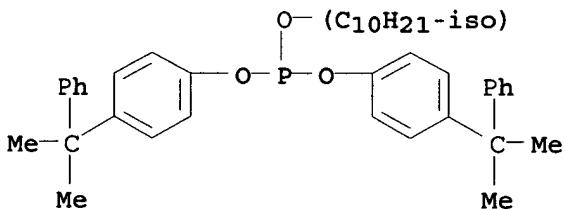
CN Phosphorous acid, diisodecyl 2-[4-(1-methyl-1-phenylethyl)phenoxy]ethyl  
ester (9CI) (CA INDEX NAME)



RN 756522-33-5 HCPLUS  
 CN Phosphorous acid, diisodecyl 3-[4-(1-methyl-1-phenylethyl)phenoxy]propyl ester (9CI) (CA INDEX NAME)



RN 756522-35-7 HCPLUS  
 CN Phosphorous acid, isodecyl bis[4-(1-methyl-1-phenylethyl)phenyl] ester (9CI) (CA INDEX NAME)



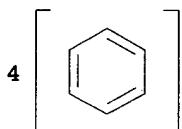
L34 ANSWER 2 OF 3 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2000:658216 HCPLUS  
 DOCUMENT NUMBER: 133:224001  
 TITLE: Halogen-free flame-retardant adhesives for manufacture of printed circuit boards  
 INVENTOR(S): Ito, Toshihiko; Tanaka, Masaru; Hirayama, Takao  
 PATENT ASSIGNEE(S): Hitachi Chemical Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000256633	A2	20000919	JP 1999-61516	19990309
PRIORITY APPLN. INFO.:			JP 1999-61516	19990309
AB	The adhesives, showing good resistance to heat and electrolytic corrosion, comprise (A) copolymers prepared from nitrile-containing monomers, epoxy-containing			

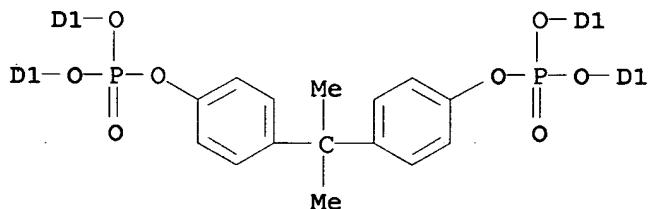
monomers, and other comonomers 70-90, (B) epoxy resins 7-20, and (C) hardeners or hardening catalysts 3-10 parts and contain N compds. (based on 100 parts of A-B-C total) (D) 20-40 parts, (E) P compds. 20-40 parts, and (F) crystal water. The copolymer A may comprise acrylonitrile 15-35, glycidyl (meth)acrylate 0.5-4, and other comonomers 61-84.5%. Thus, 533 parts 2:15:30:53 (%) glycidyl methacrylate-acrylonitrile-Bu acrylate-Et acrylate copolymer was blended with bisphenol A epoxy resin (Epikote 828) 15, cresol novolak epoxy resin (Epo Tohto YDCN 703) 5, a phenolic resin (Plyophen LF 2822) 8, Al2O3 (Higilite H 42STE) 85, biphenyl-type phosphoric acid ester (CR 747) 30, melamine resin (Melan 523) 10, a melamine-phenol resin 15, and an imidazol-type hardening accelerator (Curezol 2PZCN) 0.2 part to give a varnish, which was applied on a polyimide film, dried, and laminated with a Cu foil to give a specimen showing 180° peeling strength 1.2 KN/m, solder heat resistance 330°, and UL 94 fire resistance rating V0.

IC ICM C09J133-18  
ICS C09J011-04; C09J011-06; C09J133-14; C09J161-34; C09J163-00  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76  
ST nitrile polymer blend nonhalogen fireproofed adhesive; epoxy resin adhesive phosphate blend fireproofed; melamine resin blend fireproofed adhesive; electrolytic corrosion heat resistant adhesive; printed circuit board nonhalogen adhesive  
IT Phenolic resins, uses  
Phenolic resins, uses  
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(aminoplast-, fireproofing agents; halogen-free epoxy resin adhesives containing N compds. and P compds. for printed circuit board manufacture)  
IT Phenolic resins, uses  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(epoxy, novolak, cresol-novolak; halogen-free epoxy resin adhesives containing N compds. and P compds. for printed circuit board manufacture)  
IT Aminoplasts  
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(fireproofing agents; halogen-free epoxy resin adhesives containing N compds. and P compds. for printed circuit board manufacture)  
IT Fireproofing agents  
Printed circuit boards  
Semiconductor device fabrication  
(halogen-free epoxy resin adhesives containing N compds. and P compds. for printed circuit board manufacture)  
IT Adhesives  
(heat- and fire-resistant; halogen-free epoxy resin adhesives containing N compds. and P compds. for printed circuit board manufacture)  
IT Aminoplasts  
Aminoplasts  
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(phenolic, fireproofing agents; halogen-free epoxy resin adhesives containing N compds. and P compds. for printed circuit board manufacture)  
IT Epoxy resins, uses  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(phenolic, novolak, cresol-novolak; halogen-free epoxy resin adhesives

containing N compds. and P compds. for printed circuit board manufacture)  
IT 9003-08-1, Melan 523 23996-12-5, Curezol 2PZCN 93981-32-9, CR  
747  
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or  
engineered material use); USES (Uses)  
(fireproofing agents; halogen-free epoxy resin adhesives containing N  
compds. and P compds. for printed circuit board manufacture)  
IT 25068-38-6P, Epikote 828 58152-79-7P, Acrylonitrile-butyl acrylate-ethyl  
acrylate-glycidyl methacrylate copolymer 101706-82-5P, Epo Toho YDCN  
703 206566-37-2P, Plyophen LF 2822 292145-57-4P  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP  
(Properties); TEM (Technical or engineered material use); PREP  
(Preparation); USES (Uses)  
(halogen-free epoxy resin adhesives containing N compds. and P compds. for  
printed circuit board manufacture)  
IT 93981-32-9, CR 747  
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or  
engineered material use); USES (Uses)  
(fireproofing agents; halogen-free epoxy resin adhesives containing N  
compds. and P compds. for printed circuit board manufacture)  
RN 93981-32-9 HCAPLUS  
CN Phosphoric acid, (1-methylethylidene)di-4,1-phenylene  
tetrakis(methylphenyl) ester (9CI) (CA INDEX NAME)



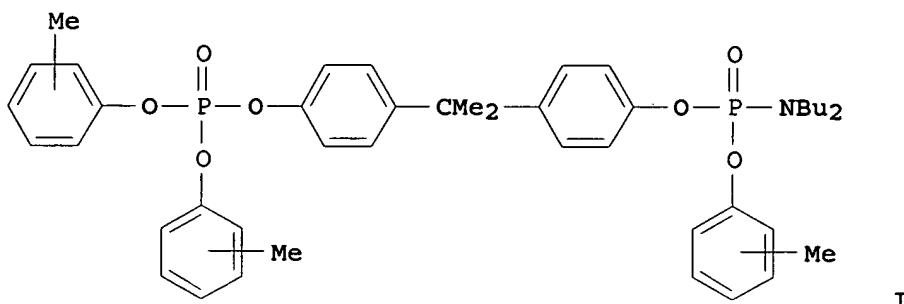
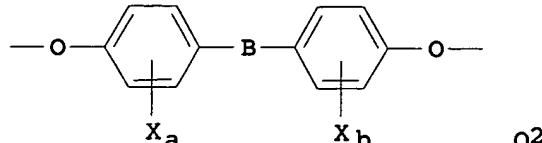
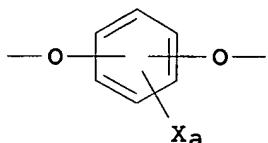
4 ( D1-Me )



L34 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1996:382520 HCAPLUS  
DOCUMENT NUMBER: 125:35058  
TITLE: Halo-free fire-resistant thermoplastic resin  
compositions  
INVENTOR(S): Matsubara, Kazuhiro; Katsumata, Tsutomu  
PATENT ASSIGNEE(S): Asahi Chemical Ind, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08059888	A2	19960305	JP 1994-192587	19940816
PRIORITY APPLN. INFO.:			JP 1994-192587	19940816
OTHER SOURCE(S) :	MARPAT	125:35058		
GI				



**AB** The compns. comprise synthetic resins and R1R2P(O)[AP(O)R3]nR4 [n = 1-100; R1-4 = NR5R6, OAr; R5, R6 = H, C1-10 alkyl, alkenyl, cycloalkyl, PhCH2, Ph, C1-3-alkyl-substituted aryl; A = Q1, Q2; X = halo; a, b = 0-4; B = SO2, C1-4 alkylidene, alkylene] containing ≥3% P and ≥0.1% N. Thus, poly(2,6-dimethyl-1,4-phenylene ether) 50, high-impact polystyrene 50, poly(tetrafluoroethylene) 0.1, and a phosphate ester (I) 20 parts were melt-kneaded, pelletized, and injection-molded to give a test piece showing good fire resistance.

**IC** ICM C08K005-5399

ICS C08L101-00

**CC** 37-6 (Plastics Manufacture and Processing)

**ST** fire resistance thermoplastic halo free; amide phosphate fire retardant thermoplastic blend

**IT** Fireproofing agents

(halo-free fire-resistant thermoplastic resin compns. containing phosphate amide fire retardants)

**IT** Fluoropolymers

Plastics

Polycarbonates, properties

Polyoxyarylenes

RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)

(halo-free fire-resistant thermoplastic resin compns. containing phosphate amide fire retardants)

**IT** 177190-05-5P 177996-35-9P 178066-89-2P

RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)

(fire retardant; halo-free fire-resistant thermoplastic resin compns.)

containing phosphate amide fire retardants)

IT 9002-84-0, Tetrafluoroethylene homopolymer 24938-67-8,  
 Poly(2,6-dimethyl-1,4-phenylene ether) 25134-01-4, 2,6-Xylenol  
 homopolymer  
 RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)  
 (halo-free fire-resistant thermoplastic resin compns. containing phosphate  
 amide fire retardants)

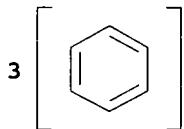
IT 80-05-7, reactions 100-61-8, reactions 108-46-3, Resorcinol, reactions  
 108-95-2, Phenol, reactions 111-92-2, Dibutylamine 122-39-4,  
 Diphenylamine, reactions 1319-77-3, Cresol 10025-87-3, Phosphorus  
 oxychloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (halo-free fire-resistant thermoplastic resin compns. containing  
 phosphate amide fire retardants)

IT 100-42-5D, polymers  
 RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)  
 (high-impact; halo-free fire-resistant thermoplastic resin compns.  
 containing phosphate amide fire retardants)

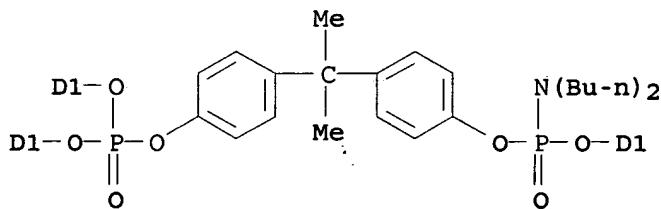
IT 178066-89-2P  
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP  
 (Preparation); USES (Uses)  
 (fire retardant; halo-free fire-resistant thermoplastic resin compns.  
 containing phosphate amide fire retardants)

RN 178066-89-2 HCAPLUS

CN Phosphoric acid, 4-[1-[4-[(dibutylamino)(methylphenoxy)phosphinyl]oxy]phenyl]-1-methylethyl phenyl bis(methylphenyl) ester (9CI) (CA INDEX NAME)



3 ( D1-Me )



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